

REMARKS

Claims 1-5 are pending. Reconsideration and allowance in view of the following remarks are respectfully requested.

Claims 1-5 were rejected under 35 U.S.C. §103(a) over Kelly et al. (U.S. Patent 4,255,777) in view of Parmentar et al. (U.S. Patent 4,664,315). This rejection is respectfully traversed.

Applicants appreciate the indication that claims 2-4 contain allowable subject matter.

Claim 1 recites a method for atomizing a liquid medium. The method comprises supplying the liquid medium to an internal volume of a nozzle body under pressure, wherein the nozzle body is put on ground potential, and applying a pulsed voltage to an electrode, the pulsed voltage bringing about an electrostatic charging of the liquid medium in a magnitude that results in bursting of drops discharged from a nozzle opening due to the electrostatic charge.

The Kelly patent discloses an electrostatic atomizing device including a cylindrically shaped non-conductive housing 12 formed of, for example, Lucite. A first electrode 38 is connected in series to a high voltage source 40. A second electrode 64 is disposed transversely and spaced apart from the first electrode 38. The Examiner recognizes that the Kelly patent does not disclose the housing 12 being on ground potential.

Applicants respectfully disagree with the Examiner's assertion that the Parmentar patent overcomes the deficiencies of the Kelly patent. The Parmentar patent discloses an electrostatic spray nozzle including an electrostatic nozzle assembly 10 having a nozzle body 12 formed of a dielectric material. Mounted at the

base of the nozzle body 12 is an air nozzle 28 also formed of dielectric material. The nozzle body 12 includes a yoke 14 at its upper end which receives a mounting bracket 16 connected by a pin 18. The bracket 16 is grounded.

The Parmentar patent emphasizes that grounding of the electrode reduces the charging efficiency of the electrode and limits the effectiveness of the spray device. To avoid grounding of the electrode, the Parmentar patent discloses providing an electrical standoff by forming an irregular shaped outer surface 42 between an inductor ring 48 and the grounded bracket 16. Recesses and ridges formed by grooves 40, and the radial flange 31 tend to disrupt the flow of particles along the electric field produced by the charge particles emitted from the discharge orifice 32 which lengthens the electrical path between the discharge orifice 32 and the grounded bracket 16. Thus, Parmentar teaches away from the presently claimed invention. If a grounded conductive nozzle body were used in the Parmentar patent to inject highly conductive liquid, the liquid would create a short circuit between the source of the electric potential and ground. Therefore, one of ordinary skill would have recognized that the device of the Parmentar cannot use a grounded nozzle body to perform its intended function.

Neither of the Kelly or Parmentar patents, alone or in combination, disclose or suggest a nozzle body put on ground potential as in Applicants' independent claim 1. Such a feature encompasses Applicants' embodiment as illustrated in Fig. 2 wherein an electrically conducted nozzle body 1 is placed at ground potential to, for example, generate an adequately sized electrical field between the high voltage electrode and nozzle body in the area of the nozzle opening.

The relied upon combination of the features of the Kelly and Parmentar patents would not have resulted in a nozzle body placed at a ground potential. The Kelly patent specifically discloses a non-conductive housing at column 8, line 23. The Parmentar patent discloses that the nozzle body 12 is formed of a dielectric material at column 4, line 56. The Kelly patent uses electrode 64 and 82 to create an electric field. The Parmentar patent uses an inductor ring 48 to create an electric field, and teaches away from any use of a grounded nozzle body. Thus, neither the housing of the Kelly patent nor the nozzle body of the Parmentar patent are disclosed or suggested as being grounded. Claim 1 is therefore allowable.

Dependent claim 5 is allowable for at least the reasons discussed above as well as for the individual features it recites.

Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) over the Kelly patent in view of the Parmentar patent are respectfully requested.


Early and favorable action with respect to this application is respectfully requested.

Should the Examiner believe that anything further is necessary to place the application in condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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